confined to Africa and Syria, and the occurrence of an extinct species at Samos may indicate that this group of animals originally reached Africa from the north-east. The fossil pangolin is very considerably larger than any of the existing species, and has been referred to an extinct genus. Since no fossil pangolin has been found in any European deposits, the occurrence of this extinct type is of some interest.

Lastly, we must not omit to mention that the deposits at Samos have also yielded remains of an extinct ostrich, although this species is unrepresented in the collection acquired by the British Museum. The African ostrich is known to have ranged into Persia and Baluchistan within the historic period, and since the genus also occurs fossil in the above-mentioned Siwalik deposits of Northern India, the evidence of its former existence in Samos shows that it once inhabited the whole of that extensive belt of country flanking the north-eastern frontier of Africa, which seems, as we have already mentioned, to have been the original home of the modern Ethiopian fauna.

In conclusion, we venture to express the hope that means will ere long be found by which this magnificent collection of fossil remains will be described and illustrated in a manner worthy of its importance and interest.

R. L.

NOTES.

WE learn that the Weather Service of the United States hitherto under the direction of the Chief Signal Officer, is to be transferred to the Agricultural Department after July 1, 1891. A chief will be appointed at a salary of 4500 dollars a year. The present Signal Corps will be discharged from the army, and will thereafter serve as civilians.

THE first *conversazione* for the season of the Royal Microscopical Society will be held in the Society's rooms, 20 Hanover Square, on the evening of Monday, December 1.

ON Friday last, a marble bust of William Symington was unveiled in the west wing of the Museum of Science and Art, Edinburgh, by Sir William Thomson, who said that Symington was the real discoverer and the practical originator of the steamboat. It was interesting to note that Symington exhibited before the Professors of Edinburgh University a model of a carriage to be moved on the public roads by the power of steam. In 1803, Symington constructed a steamer which took in tow two laden sloops, each 70 tons burden, on the Forth and Clyde Canal. The unveiling of the bust took place amidst loud cheering. Sir R. Murdoch Smith, on behalf of the Museum authorities, accepted the custody of the bust. Amongst those present at the ceremony was Mrs. Dickie, Glasgow, a granddaughter of Symington. The bust is by D. W. Stevenson, R.S.A.

M. TCHIHATCHEF, whose death we lately recorded, left 100,000 francs to the Paris Academy of Sciences, to provide prizes for naturalists who have made noteworthy Asiatic researches.

SOMEWHAT late we learn that Dr. Jose Jéronimo Friana died at Paris on October 31. The cause of his death is not stated, but the fact that a daughter died in the same house within three days of her father's death points to an epidemic. Dr. Friana was a native of New Granada, born in 1828, and previous to his coming to Europe he was attached to a Survey Commission, and made a collection of more than 5000 species of plants. About the year 1860 he came to Europe with his family, and never returned to his native country. The principal object of his visit to Europe was to determine his plants and prepare a Flora of New Granada. For this purpose he resided partly in Paris and partly at Kew, and spent some years working out his collections. In conjunction with the late Prof. J. E. Planchon, he commenced publishing a "Prodromus Floræ Novæ Granatensis"; but this fell through, partly, we believe, in consequence of a lack of funds, partly in consequence of Dr. Friana's time being occupied by consular and medical duties. For many years he resided wholly in Paris, and filled the position of Consul-General of the Republic of Colombia. Always hoping to be able to resume his favourite botanical pursuit, he kept his large collections at his residence. Among his published botanical work is a monograph of the Melastomaceæ, which appeared in the Transactions of the Linnean Society, and "Nouvelles Etudes sur les Quinquinas," containing *facsimiles* of Mutis's original drawings. The author visited Madrid, and studied the materials collected by Mutis. Apart from his scientific attainments, Dr. Friana was much loved for his extreme amiability.

HORTICULTURE has sustained a severe and almost irreparable loss in the sudden and unexpected death of Mr. Shirley Hibberd, which we recorded last week. An enthusiastic horticulturist, an accomplished writer, and a fluent and clever speaker, Shirley Hibberd occupied a position that it will be difficult to refill. He was sixty-five years of age, and for more than half that period he has been a constant figure at, and has taken a leading part in, the principal Shows and Congresses in connection with gardening and garden-botany. For upwards of thirty years he was editor of the *Gardener's Magazine*, and he was also the author of many little treatises of considerable literary merit. At the recent Chrysanthemum Show of the National Society of Chrysanthemum Growers, held at the Aquarium, Shirley Hibberd was the most prominent man, both in the lecture-room and as a speaker at the banquet which took place on the Thursday preceding his death. Indeed, it is supposed that he caught a chill in the conference-room, and, bronchitis supervening, the fatal result speedily followed.

IN the Reports on the progress and condition of the Royal Gardens, Kew, from 1862 onwards, there are many useful notes respecting economic and other plants. An index to these notes has just been issued, and will be welcomed by all who have preserved copies of the Reports. The work appears as Appendix III. of the *Kew Bulletin*. In this excellent periodical, to which we have often referred, are now published all notes that may be too detailed for the Annual Report on economic products and plants, to which the attention of the staff of the Royal Gardens has been drawn in the course of ordinary correspondence, or which have been made the subject of particular study at Kew. The preface to the new index concludes with the following statement:—"The *Bulletin*, of which three volumes are already published, and the fourth is in course of publication, may be looked upon as furnishing in a detailed and timely form the special information formerly included in the Annual Reports, but which a necessary economy of space precluded being treated at the length which is possible in the pages of the *Bulletin*. It may be added that the *Bulletin* is published monthly by Her Majesty's Stationery Office, and it may be obtained from Messrs. Eyre and Spottiswoode directly, or through any bookseller."

FROM January 1, 1891, the *Globus* will be edited by Dr. Richard Andree, of Heidelberg, by whose father the journal was established nearly 30 years ago.

THE Council of the University College of North Wales has just purchased for the College library the well-known collection of books belonging to Mr. E. Watkin, of Manchester (formerly of Pwllheli). It consists of upwards of 10,000 volumes, many of which are works relating to botany, chemistry, geology, and other departments of science.

THE recent fire in University College, Toronto, postponed the equipment of the psychological laboratory which Prof. J. Mark Baldwin had in view; but in the plans for the new buildings more ample accommodations are secured. The new laboratory is to be in the restored building in a retired portion of the first floor, immediately over the rooms of the physical department. It will comprise two communicating working rooms, each 16 by 21 feet, a professor's private room, to be used also as a special psychological library under charge of a fellow or instructor, and a dark room available from the resources of the physical laboratory. The first two rooms will be separated by a hall from the latter two. This part of the building will be ready for occupation, it is hoped, in the course of the next academic year. The equipment, apparatus, &c., may be delayed in consequence of the present severe tax upon the resources of the University, but special researches will be prosecuted with the aid of adapted apparatus lent from the very complete collections of the departments of Physics and Biology.

WE learn from the American papers that the provisions of the McKinley Tariff Bill include an exemption of much importance to those engaged in teaching. It permits Universities, Colleges, &c., not only to import books for the institution free of duty, but also for any teacher connected with the institution. All works in languages other than English have been placed upon the free list.

THE efforts which have been made to open commercial communication between England and the heart of Siberia by way of the Arctic Seas have at last been successful. A correspondent of the *Times*, who signs himself, "One who knows all about it," explains the circumstances connected with this remarkable triumph of skill and energy. Two ships and a tug for river work were despatched from London at the end of July and beginning of August. Owing to north-easterly winds the Kara Sea was exceptionally full of ice, so that the ships were detained for some days among ice-floes. Nevertheless, in 39 days the ships and tug reached Karaoul, 160 miles up the Yenissei, without accident. They remained there 19 days, and took 26 days to return. They were thus only 84 days, or two months and 23 days, away from the London Docks. At Karaoul they met the river expedition, which "returned safe to Yenisseisk a few days ago, and is now landing and warehousing there the valuable cargo sent out from England." The same correspondent points out that the real *crux* of the expedition lay in the 160 miles of estuary between Golcheka, at the mouth of the Yenissei, and Karaoul, at the head of the estuary, which the Russian Government had assigned as the port of discharge. Last year the *Labrador* would not ascend to Karaoul, because Captain Wiggins thought there would not be water enough to take him there, and had no steam-launch to enable him to feel his way up. On the other hand, the river ship did not dare to descend because of the gales that then prevailed. This year it was discovered that through the entire estuary there was a channel with sufficient water for ships of any draught, and the ships proceeded up the river to their destination without hindrance. It is unfortunate that Captain Wiggins was accidentally prevented from completing the work with which his name has been so intimately associated, but it was he who showed the way, and to him, more than to anyone, belongs the honour of having provided this new outlet for British commerce. That it may become an outlet of the highest importance is the conviction of no less an authority than Baron Nordenskiöld. In a letter congratulating the promoters of the undertaking, he says:—"I am persuaded that its success will once be regarded as an event rivalling in importance the return to Portugal of the first fleet loaded with merchandise from India. Siberia surpasses the North American continent as to the extent of cultivable soil. The Siberian forests are the largest in the world. Its mineral resources are immense, its climate, excepting the *tundra* and the northernmost forest region, healthy, and as favourable for culture of cereals as any part of Europe." He goes so far as to say that the future of Siberia may be "comparable to the stupendous development which we at present see in the New World."

AT the meeting of the Royal Botanic Society on Saturday, many interesting plants, tropical fruits, &c., grown in the Society's gardens, were exhibited, and the economic value of several were explained by Prof. Bentley, who also noticed a specimen of the fly Agaric on the table from Somerset, presented by Dr. Prior, as containing a very poisonous alkaloid. In some North European countries, where it is common, it is said to be used to increase the intoxicating qualities of liquor. Its name is due to the fact that an infusion in milk is used to poison flies.

PROF. LANGLEY and his assistant, Mr. Very, have been carrying on researches relating to the so-called phosphorescent light of certain insects. They lately brought the subject before the New York Academy of Sciences, and in *Insect Life* (vol. iii., 3) some account of their results is given. The insect principally used in the experiments was the large Cuban firefly (*Pyrophorous noctilucus*). The total radiant heat from the light of one of these insects (heat representing waste) was compared with that transmitted by glass from the nearly non-luminous Bunsen flame, the luminosity from which was very much fainter than that from the insect. The most accurate observations prove that the insect light is accompanied by approximately one four-hundreth part of the heat which is ordinarily associated with the radiation of flames of the luminous quality of those experimented with. Thus Nature produces this cheapest light at about one four-hundredth part of the cost of the energy which is expended in the candle flame, and at but an insignificant fraction of the cost of the electric light, which is the most economic light which has yet been devised. "Finally," the author concludes, "there seems to be no reason why we are forbidden to hope that we may yet discover a method (since such a one certainly exists and is in use on a small scale) of obtaining an enormously greater result than we now do from our present ordinary means for producing light."

THE Division of Ornithology and Mammalogy of the Department of Agriculture of the United States has recently published a Report by Dr. C. Hart Merriam on the fauna and flora of the San Francisco mountain-region of Arizona, in which views are enunciated with regard to the areas of animal and vegetable life on the North American continent different from those usually held. He maintains that there are but two primary life-areas in North America—a northern (boreal) and a southern (subtropical) area, both extending completely across the continent, and sending off long interpenetrating areas; and that the theory commonly accepted by naturalists, viz. that of three life-areas, the Eastern, Central, and Western Provinces, must be abandoned. He further recognizes seven minor life-zones in the San Francisco mountain region, four of boreal, and three of subtropical or mixed origin, the four boreal zones being correlated with corresponding zones in the north and east.

PROF. ALFRED KIRCHOFF, of Halle, contributes to the *Saale Zeitung* an article on "the anxiety with which even scientific men of repute looked forward to the autumn meeting of the International Conference on Degree Measurement, which was lately held at Freiburg." According to an abstract given by the *Times*, Prof. Kirchoff says it had been reported that a series of simultaneous observations, carried on at Berlin, Strasburg, and Prague, went to show that a decrease in latitude was in process, at least in Middle Europe, and further reports from other Observatories showed that a similar phenomenon had been noted in other places in Europe. This implied an alteration in the direction of the earth's axis. That is, the poles and equator, latitude and longitude, are not, as usually assumed, practically fixed data, but are liable to the general terrestrial law of flux. The amount of ascertained decrease of latitude at the end of the six months' period from August 1889 to February 1890 was half a second. But it was notified to the Conference that the Berlin observations for the half-year ending last August showed an increase of latitude amounting to 0·4, or two-fifths of a second. In other words, the fluctuation of the axis is due to a minute oscillation, probably owing to some changes in the internal mass of our planet, and not to be confounded with the precession of the equinoxes.

We are glad to note that in his address at the opening of the present term at the Johns Hopkins University, Dr. Gilman, the President, was able to speak of the prosperous material condition of the institution after its recent difficulties. Many friends came forward to support the University in its time of trial; and the trustees have been able to make a most advantageous change in a considerable part of the endowment, so that a million of dollars, lately unproductive, now stand invested in an excellent security yielding a fixed and satisfactory income. Dr. Gilman devoted a part of his address to an account of the impressions produced upon him during his recent travels in Europe.

The new number of the *Internationales Archiv für Ethnographie* (Band iii., Heft 5) opens with a valuable and interesting paper (in German) on Venezuelan clay vessels and figures both of ancient and of modern times, by Dr. A. Ernst, Curator of the National Museum at Caracas. Among the remaining articles is one in English, by Prof. Giglioli, on a remarkable and very beautiful ceremonial stone adze from Kapsu, New Ireland. The illustrations are up to the usual high level maintained by this admirable periodical.

Messrs. G. Philip and Son have issued a second edition of "The Unknown Horn of Africa," by the late F. L. James. This edition is preceded by an obituary notice of the author, who was killed by a wounded elephant on April 21, 1890, at San Benito, about 100 miles north of the Gaboon River on the west coast of Africa, and within a mile and a half from the shore.

The Sanitary Institute has published a volume of Transactions, which, as vol. x., continues the series issued by the Sanitary Institute of Great Britain. It contains a full report of the Congress held at Worcester in 1888. Among the contents are papers on the sanitary aspects of the pottery manufacture, by Dr. J. T. Arlidge; on the public health in India, with special reference to the European army, by Sir H. S. Cunningham; sewage disposal, by Prof. H. Robinson; the technical education of plumbers, by Mr. H. D. Matthias; some recent results obtained in the practical treatment of sewage, by Dr. Percy F. Frankland; and the smoke nuisance, under the Alkali Acts, by Mr. H. Fletcher. We may also note a lecture to the Congress, by Sir Douglas Galton; and addresses to the working classes, by Prof. W. H. Corfield, Mr. Henry Law, and Dr. J. F. J. Sykes.

Among the contents of the "Papers and Proceedings of the Royal Society of Tasmania for 1889," just received, is an excellent note by Colonel W. V. Legge, R.A,, on the Australian curlew and its closely allied congeners. Dealing with the migrations of the Australian curlew, he says it migrates north through the Malay Archipelago, being there met with on passage in Borneo, New Guinea, the Philippines, and other islands; thence northward along the coast of China to Amoor Land, and up to Lake Baikal, in which region it is supposed to breed. In Japan, it has been met with as far north as Hakodadi. New Zealand seems to be its eastern limit.

Dr. P. Kuborn, of the University of Liége, has prepared a French adaptation of Prof. D. J. Cunningham's "Manual of Practical Anatomy." The work is called "Guide de Dissection, et Résumé d'Anatomie Topographique." It is published by Marcel Nierstrasz, Liége; and G. Carré, Paris.

Mr. William Heinemann has published the "authorized translation" of Dr. Koch's paper on the cure of consumption—the paper contributed to the *Deutsche Medizinische Wochenschrift.*

A discovery, which may lead to important results, has been made by M. Chabrié during the course of his experiments upon the properties of the recently isolated gaseous fluorine substitution products of marsh gas. The intimate relation between these bodies and chloroform, and the possibility of their possessing even greater physiological activity, led M. Chabrie to investigate the action of one of them, methylene fluoride, CH_2F_2, upon specific microbes, with the result that in the case of the particular bacillus experimented upon, the gas is found to absolutely destroy them. The bacteria in question, which have formed the subject of these first experiments, were those discovered by M. Bouchard, in 1879, in urine. Two eprouvettes of equal size were taken and filled with mercury over a mercury trough. Equal small quantities of urine containing colonies of the bacteria were introduced into each, and afterwards a mixture of air and methylene fluoride admitted into one of the eprouvettes, and an equal volume of air alone into the other. The two vessels were both maintained at the temperature of the body, 35°, for 24 hours. At the end of this time a few drops of the urine from each of the vessels were introduced into separate flasks containings terilized culture medium, and both maintained at the same stove temperature for 24 hours, and again for 48 hours. At the expiration of this period the urine which has stood in contact with air alone was found to have given rise to a flourishing colony of the bacteria, while that which had been in contact with the mixture of air and methylene fluoride had not given rise to a trace of a culture. According to MM Albarran and Hallé, twelve hours are ample for the development of this bacillus, hence methylene fluoride had evidently been fatal to the germs. The experiment was again repeated without the use of mercury, in sealed tubes, but with the same result. It appears, therefore, that methylene fluoride possesses the property of destroying the urinary bacteria in question. M. Chabrié has made special experiments in order to determine whether the gas possesses any local irritant action, and the results as far as they go appear to be eminently satisfactory. He is now directing his experiments upon the microbe of the hour, that of tuberculosis, and his results will doubtless be watched with considerable interest. Methylene fluoride is easily prepared by heating silver fluoride with methylene chloride in a sealed tube. M. Chabrié has also succeeded in preparing the higher homologue, $C_2H_4F_2$, ethylene fluoride, by the analogous reaction with ethylene chloride, and is extending his observations to the antiseptic properties of this latter gas. An account of the above experiments is given in the current number of the *Comptes rendus.*

OUR ASTRONOMICAL COLUMN.

A New Comet (?).—The following is an account that was received through Reuter, and printed in the *Times* on Monday last, relating to a comet that was visible at Grahamstown. If the statement is correct, we have represented here something that is quite unique in cometary phenomena. It has still to be explained how it was that a phenomenon of such a nature